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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,818	12/12/2003	Date-Gun Lee	OPP031054US	2252
36872	7590	05/12/2006	EXAMINER	
THE LAW OFFICES OF ANDREW D. FORTNEY, PH.D., P.C. 7257 N. MAPLE AVENUE BLDG. D, SUITE 107 FRESNO, CA 93720			PERT, EVAN T	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 05/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/734,818		LEE, DATE-GUN	
	Examiner		Art Unit	
	Evan Pert		2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because it fails to identify any example of a combination of “photoresist”, “insulating layer” and “etchant” or etch processes that can be used together for practicing the invention (even though applicant explains that no example whatsoever is needed in spite of MPEP 2164.02).

Particularly, the limitations of “simultaneously etching the photoresist pattern and the insulating layer” in the context of “setting an etch stop point” is not enabled:

As is well known in the art, an organic “photoresist” is used as a patterned mask for etching a pattern in an inorganic “insulating” layer, which means that the “photoresist” in the prior art is not *significantly* etched when the “insulating” layer is etched (e.g. see U.S. 4,376,672).

Applicant’s claimed invention is different than what is well known in the art in that “photoresist” and “insulating” layer material are removed “simultaneously,” with the etching rates of photoresist and insulating layer chosen to allow “setting an etch stop point” by choosing appropriate thicknesses of the “photoresist” and “insulating layer” with respect to “etching rates” of the “photoresist” and “insulating layer” (i.e. particular materials with particular etch selectivity for a particular etch process must be known and selected).

Since no particular insulating material, photoresist or etching technique is identified for the invention; one of ordinary skill in the art would require undue experimentation to determine an appropriate photoresist/insulating-layer/etching-technique combination to arrive at applicant’s invention [see MPEP 2164.01(a)].

The thicknesses claimed for “photoresist,” for example, in claims 2 and 3, wouldn’t work for practicing the invention with “photoresist” and “insulating layer” in US 4,376,672 where the “photoresist” does mask, but does not significantly get etched when the “insulating” layer is etched.

What use is thickness in claims 2 and 3, if there is no specific material or process named? How will one of skill readily find the working combination using available literature or data books? Applicant has not shown how one of ordinary skill in the art can determine what particular materials to use, without undue experimentation.

The examiner maintains that “undue experimentation” is required [MPEP 2164.01(a)].

Claim Rejections - 35 USC § 112

2. Claims 1-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

The claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Specifically, any “photoresist” and any “insulating layer” of the prior art such as the photoresist and insulating layer disclosed in US 4,376,672 would not work for “setting an etch stop point” in the instantly claimed invention, since the “photoresist” in the ‘672 reference does not significantly etch (it’s a mask) when the insulating layer is etched.

Response to Arguments

3. Applicant's arguments filed February 28, 2006 have been fully considered but they are not persuasive. Particularly, the claimed invention lacks enablement because *undue experimentation* is required [MPEP 2164.01(a)].

Applicant states that no working example is required, contrary to the facts set forth in MPEP 2164.02, which does state that a “prophetic example” or “one example” may be sufficient, depending on the particular facts of the case.

In this case, to overcome the accusation of “undue experimentation” being required, applicant just *states* that it would be easy to pick the photoresist type, insulating layer type, and etching processes, “without undue experimentation”; yet applicant does not cite any literature or evidence except Wolf and Tauber:

Wolf and Tauber explain that etch *selectivity* is chosen based on *many parameters*, particularly when etching in the manner of the prior art where the photoresist is etched away at a different time than when an insulating layer under the nitride mask is etched (rather than “simultaneously” as claimed).

Factors to consider when there is a question of “undue experimentation” are covered in MPEP 2164.01(a), where *all 8 factors* enumerated apply in this case:

Applicant's method is viewed as an extreme departure from the prior art: In the prior art, typically, a photoresist is used for patterning a hard mask (e.g. nitride), whereby the photoresist is then removed, followed by an insulating layer being etched through openings in the hard mask.

Applicant's method, while inadequately disclosed to overcome undue experimentation, is novel in that an insulating layer is etched through holes in a hard mask at the same time as a photoresist that patterned the hard mask is etched away from the hard mask, whereby the photoresist is etched away completely at the same time as the holes are completed (i.e. "etch *stop point*") in the insulating layer.

Applicant cites Wolf and Tauber, yet this citation merely supports the examiner's rejection: The Wolf and Tauber reference shows *many* parameters must be evaluated for selecting etch selectivity; and this is for the case where the photoresist is not even removed at the same time as the holes are etched in the insulating layer.

In this case, there is not a single specific material named, except by generic description as "photoresist", "insulating layer" and "nitride". There are no etch processes named either. Applicant believes that the disclosure is adequate, yet fails to show how undue experimentation is avoided using any reference(s) available at the time of filing.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action.

In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evan Pert whose telephone number is 571-272-1969. The examiner can normally be reached on M-F (7:30AM-3:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ETP
May 10, 2006


EVAN PERT
PRIMARY EXAMINER